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Impact of Government Expenditure on Agricultural Value Chain in Nigeria

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Abstract

This research examined the impact of government expenditure on agricultural value chain in Nigeria. It uses annual time series data for the period 1998-2018. Statistical Techniques, survey, simple percentages and the Ordinary Least Squares (OLS) methods were adopted. The OLS result using Multiple Regression analysis revealed an insignificant positive relationship between government expenditure and Agricultural value chain, proxy by Aggregate importation of rice (AMR). Imports had a negative sign; it is a leakage on the economy. It however, showed that agricultural gross domestic product (ADP) has a positive relationship with government expenditure, at 5 percent level. The pair-wise Granger causality tests showed that government expenditure on agriculture (GEA) granger causes aggregate importation of rice (AMR), this was indicated by their respective F-statistics and probability values which stood at 0.39420(0.6815).. In conclusion, government expenditure, with supportive policies, would have huge impact on agricultural value chain in Nigeria. The agricultural sector is the engine of economic recovery, growth and development, therefore an improvement in government spending to the sector is recommended. This study contributes to the downstream linkages in the agricultural sector.

Keywords: Agricultural value chain; Food imports; Processing; Value-added; Government expenditure and agribusiness.

1. Introduction

Nigeria has the largest economy in Africa, with gross domestic product per capita of $2,028. However, income distribution is highly unequal with Gina coefficient at 49. The Covid-19 pandemic has destroyed the livelihoods of the poorest and most vulnerable, as well as all who work in the informal sector (80%) of the economy. It has also weakened the income strength of the government and the wealthy as well as destroyed many businesses. There are hikes in prices of basic needs, food inflation due to food shortages and food insecurity, with astronomic rise in unemployment to 33.6 percent. Nigeria already has very low human development index ranked at 152 of 157 countries in the world, (World Bank, 2018). Agriculture has been an important sector in the Nigerian economy, accounting for 80% of the gross Domestics Product (GDP) and this was before the discovery of oil in 1956. The agricultural sector provided employment opportunities for the teeming population, eradicated poverty and contributed to the growth of the economy. Exchange rate policy in Nigeria prior to 1959 was fixed at par with British pound sterling when agriculture was the main stay of the economy. Devaluation of the naira started in the 1970s of the oil boom. Oil boom came with its shocks, price fluctuations and volatility in exchange rate and the value of the naira crashed. However, there was a decline in agriculture's contribution due to its neglect for the new found oil, a problem referred to as resource curse or Dutch Disease syndrome. The wealth earned by the country from the petroleum sector, resulted in the abandoning of the agricultural and other non-oil sectors (Nweze and Edame, 2016). The population of Nigeria is 200,952,695 as at July 2019, based on the United Nations estimate UNDESA (2019) and at this geometric rate of population growth, agriculture productivity needs to increase so as to enable the nation to cater for the growing population otherwise, there will be severe hunger and starvations which will have severe consequences on the economy

Ukeje (2013), submits that in the 1960s, agriculture contributed up to 64% of the total GDP but gradually declined in the 1970s to 48% due to oil boom and it continues in 1980 to 20% and 19% in 1985. This was as a result of oil glut of the 1980s. In 2017, agriculture has contributed around 20.85% to Nigeria's GDP. The GDP from agriculture decreased to N 3597916.08 million in the first quarter of 2019 from N 4978775.48 million in the fourth quarter of 2018. The GDP from agriculture in Nigeria averaged N 3832973.14 million from 2010 until 2019,

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reaching an all-time high of N 5288339, 21 million in the third quarter of 2018. Historically, the root of the crises in the Nigerian economy lies in the neglect of the agricultural sector by the Federal Government towards developing dependence on a mono-product economy based on oil Ukeje (2013). Since the periods of the cocoa, palm oil, cotton and groundnut pyramid in the 1960s, there seems to have been no significant improvement in processing, value added in the agricultural industry. Marketing of raw materials seem to have crowded-out jobs, crippled the sector and resulted in huge perishable losses in the post harvests. In 2018, Nigeria spent $22 billion Dollars on foods importation, NBS (2019).

In 2011, the government launched the Agricultural Transformation Agenda, with the aim of changing the perception about agriculture as a development issue instead of pure subsistence. The vision in the transformation strategy was to achieve a hunger-free Nigeria through an agricultural sector that drives income growth, accelerates achievement of food and nutritional security, generates employment and transforms Nigeria into a leading player in global food markets to grow wealth for millions of farmers. In order to achieve this vision, the value chain approach needs to be adopted in the input and output markets. Fertilizer procurement and distribution, marketing institutions, financial value chains and agricultural investment framework are poised for a change using this approach.

Ironically, the issues and challenges have not changed much since the dawn of agriculture in Nigeria. Majority of farmers (more than 65%) still use the crude input/method of farming; Storage ideas and facilities have not improved and processing is almost absent. Thus, losses incurred from post-harvest handling are still very high; Infrastructure development has not progressed to meet the challenges of agribusiness, resulting in stagnation of manufacturing and marketing, as well as processes and logistics problems; Access to markets has remained a recurring headache making the idea of farming very unattractive to most people.

According to Etale and Ayunku (2015), agriculture is the largest sector in many developing countries, Nigeria inclusive. More importantly, most of the world's active but poor live in rural areas and are primarily engaged in agriculture. The development of agriculture cannot be over emphasized as it will provide employment opportunities to teeming youths in Nigeria. The Lagos Chamber of Commerce and Industry identifies the agricultural sector in Nigeria as the segment that is most critical to the achievement of the elusive goal of a diversified economy (Etale and Ayunku, 2015). Based on the afore-mentioned, there is need to enhance the agricultural value chain in Nigeria. Expenditure on infrastructure, productive activities, small scale agricultural entrepreneurs, and government owned enterprises ought to contribute positively to economic growth.

Agriculture remains the economic engine of Africa, promoting economic transformation in Africa will depend largely on stimulating agricultural growth. The underlying premise is that through broad-based smallholder-led structural transformation, Africa can achieve the desired level of poverty-reducing growth (Kimenyi *et al.*, 2012; Mashindano *et al.*, 2011; Tomsik *et al.*, 2015).

1.1. Statement of the Problem

The Agricultural sector in Nigeria seems to have low productivity compared to other countries, which seems to be caused by lack of emphasis on the value chain. There has been a dramatic increase in the incidence and severity of poverty in Nigeria, arising in part from the dwindling performance of the agricultural sector where a preponderant majority of the poor are employed. There are acute food shortages and rampant food imports, as well as dumping challenges in Nigeria all arising from under-use of agriculture capacity. Nigeria resorts to using huge amount of its annual budget to import rice, fish and dairy products, furniture and wood products, cosmetics, traditional medicines and tea from China, chocolate, processed tomatoes, live animals, poultry products, wheat and meat. The situation is worse by Nigeria exporting raw and unprocessed yam and perishable vegetables, cocoa, cashew, palm oil and sesame seeds. This is a way of exporting jobs, income and revenue to other countries that domesticate value chain. Capacity utilization is very low in Nigeria, economy diversification is lips service repeated by almost every politician for decades. Nigeria's competitiveness, infrastructure and ease of doing business indices are very poor with almost zero agricultural value added. Despite the rich endowment of Nigeria, especially the rural areas with abundant natural and material resources, rural roads, markets, electricity, water supply and health facilities are deplorable, worsened by present day insecurity. Ironically, huge government expenditure and policies have been targeted at rural industrialization and development with no tangible results due to lack of political will, corruption and lack of implementation. Poverty, diseases and hunger is more acute in the rural sector where about 80 percent of the population engages in subsistence farming for livelihood sustenance. Unfortunately, this situation has over the years prevented most smallholder farmers from acquiring and gaining access to modern agricultural facilities, technologies and improved inputs as well as substantial capital base to improve and enhance all-year round farming in the country.

Besides, Nigerian agriculture is mainly rain-fed and characterized by low labour productivity. More than three-quarters of Nigeria's agricultural area is rain-fed and subsistence in nature. Therefore, this situation calls for all-year round farming which is inevitable in Nigeria. It is evident that the rain-fed agriculture, which correlates with seasonal food supply, cannot bridge the food supply-demand gap as well as income level gap among farmers in the country. Moreover, Agwu and Edun (2017) avers that rain-fed agriculture can no longer cope with food demand and sufficiency throughout the year as a result of the growing Nigerian population coupled with the issue of climate change. These challenges therefore make dry season or Fadama irrigation/farming critical and inevitable to enhance optimal agricultural production especially among small scale farmers in Nigeria. There is need to increase farmers' resilience to extreme climate variability by reducing crop losses.

Many scholars such as Ofana *et al.* (2016); Koyenikan and Foby (2010); Agwu and Edun (2007) and Achoja (2014), have collaborated the low productivity in Nigeria's agricultural sector, however, the gap in research still exists in the relationship/impact of government expenditure on agricultural value chain, which this study seeks to fill.

It is against this backdrop that this study is set to answer the following research questions:

1. Is there any significant relationship between government expenditure and agricultural value chain in Nigeria?
2. Does government expenditure has any significant impact on the agricultural sector in Nigeria?
3. What are the challenges to government expenditure and agricultural value chain in Nigeria?

1.2. Significance of Study

Agriculture is Nigeria's major endowment. The need to innovate and improve the agricultural value chain for employment generation, self-reliance, food security and exports revenue cannot be overemphasized. This study is timely, and in the right direction as it would solve the research questions and benefit the various stakeholders in Nigeria's agricultural industry. The outcome of this study would aid farmers either those on large or small scale production with respect to stimulating their ideas on value-chain initiatives and untapped potentials in the industry. It would further help the government to evaluate and appraise their expenditure on agricultural value chain, the achievements and the challenges. It will contribute as a guide to local and foreign investors in a promising and profitable sector. The study is significant to the Nigerian economy due to its emphasis on a sector that is the mainstay of the economy, leading to economic growth and development. Agricultural entrepreneurs engaged in small and medium scale processing, manufacture of agricultural inputs value chain and exporters of value-added products will also find this study extremely significant. Finally, this study will inform the general public on the need to invest in agricultural value chain.

Some key policies have recently favored the agricultural value chain in Nigeria: the ban on importation (border closure), back to farm initiative, anchor borrowers' program and the school feeding program which increases demand for local products. How sustainable are these programs for the value chain development? This study focuses on rice value chain, palm oil value chain, value chain in fishery and value chain in the dairy industry.

2. Literature Review and Hypotheses Development

According to Ogboru (2010), government expenditure refers to the purchase of goods and services, which include public consumption and public investment, and transfer payments consisting of income transfers (pensions, social benefits) and capital expenditure. In the context of this study, government expenditure is seen as expenses incurred by the federal, state and local governments to promote and develop agricultural value chain. In line with this, the CBN (2011) classified federal government expenditure in Nigeria into expenditures on government functions such as administration, social and community service, economic services and transfers. Expenditures on economic services include those on agriculture, construction, water and gas, transport and communications, roads and other pubic goods.

The term value chain was first popularized in a book published in 1985 by Michael Porter, who used it to illustrate how companies could achieve what he called "competitive advantage" by adding value within their organization. An increasing number of governments, bilateral and multilateral aid organizations are using this concept to guide their development interventions. Eneji *et al.* (2019), conceptualizes agricultural value chain as the relationship between wealth and land, labor, capital, entrepreneurship and technology applied in the agricultural industry or agribusiness. It explains the relationships arising from the resource-using and wealth creation activities in the upstream and downstream agricultural enterprise: comprising production, processing, distribution/marketing and consumption of products of farms and ranches. A value chain is a business model that describes the full range of activities needed to create a product or service. For companies that produce goods, a value chain comprises the steps that involve bringing a product from conception to distribution and everything in between such as procuring raw materials, manufacturing functions, and marketing activities. It is because Nigeria has not developed sufficiently its value chain that production efficiency which could have been realized from the processing of our massively harvested crops is lost; for example cocoa beans are exported unprocessed and are transformed into varied products such as beverages, chocolate bars and candies to mention but a few which are in turn imported into the country and sold to us at increased prices. The same analysis holds for crude oil export and importation of petroleum products.

Value chain can also be seen as a vehicle by which new forms of production, technologies, logistics, labor processes and organizational relations and networks are introduced. An important example is the car industry, in which increasingly fine-meshed production and distribution networks have emerged worldwide and developing country suppliers have been able to take their share of R & D and sophisticated production processes (Ivarsson and Alvstam, 2015). Agriculture is an important economic sector in many developing countries. A large proportion of the world's poor people lives in rural regions and work in agriculture or its upstream and downstream sectors, Seville *et al.* (2018). The aim of poverty-oriented promotion of agricultural value chains, which emphasizes modernization and connectivity to markets, is to put resource-poor smallholder producers and processors in a better position to increase their production and productivity, to improve the quality and marketing of their products, and consequently to generate higher incomes. Oladipupo (2013), noted that the level of agricultural yield in Nigeria owes largely to the absence of concentration on the agricultural value chain, despite our possession of vast arable land. We have 92 million hectares of land in Nigeria, out of which 82 million hectares is arable. However, only about 32 to 34 million hectares are cultivated. In some countries, they do not have up to that amount of space under cultivation, but they do generate more yields, both in terms of crops and livestock. The reason why a lot of other countries develop better yield than Nigeria is because they are worth more on their value chain, from the inputs to their production, to processing, marketing, and logistics financing etc., the countries have put in numerous efforts to develop their value chain.

What we have noticed in Nigeria is that we focus more on production. Once we plant, we just want to reap. Nobody is talking about the quality of the inputs, nobody is talking about how we leverage technology in agriculture, nobody is talking about logistics or warehousing, while we have 32 million hectares cultivated, we are not getting the right value for the 32 million hectares. Oladipupo (2013), also condemned the low export income in agricultural produce, in comparison to Nigeria's increasing imports and demand for foreign produce. Nigeria imports over $20 billion worth of agricultural produce annually, (NBS, 2019). Our key imports are rice, wheat, meat, dairy products, meanwhile, we only export raw farm produce of about $0.6 billion dollars. Agricultural value chain finance is concerned with the flows of funds to and within a value chain to meet the needs of chain actors for finance, to secure sales, to buy inputs or produce, or to improve efficiency (Akinwumi, 2012). Over the last five years HGSF – essentially an attempt to actively and explicitly link agricultural development with school feeding – has received increasing attention from international agencies (Sanchez *et al.*, 2015), policy makers (e.g. CAADP2), national governments, academics (Morgan *et al.*, 2017) and practitioners (Espejo *et al.*, 2010). BMGF has funded or co-funded some of these activities as well as other closely related initiatives such as world food program's (WFP) Purchase-for-Progress (P4P) program. The rise of interest in HGSF in many ways parallels and even reflects the recent convergence in policy debates between agricultural and social protection policies, especially in Africa. This interlinking of "social" and "economic" policies for poor farmers was anticipated by earlier debates in the 1990s around "linking relief and development" and "productivity-enhancing safety nets". However this link has been sharpened by the "colonization" by social protection of many traditional agricultural policy instruments, including innovative approaches to crop insurance, agricultural input subsidies and even grain futures markets. The conventional view – that agricultural policies promote growth in yields and incomes, while social protection stabilizes yields and consumption (when production fails) – is being challenged by emerging evidence that both objectives can be achieved, over specific populations, in a single instrument (Dorward *et al.*, 2016; Sabates-Wheeler *et al.*, 2019).

2.1. Theory of Industrial Economics

Industrial Economics is the study of competitive and monopoly conditions as it affect market outcomes. The chain theory of industrial economics links market structure with market conducts and market performance. A market structure influences, in some degree, its behavior (conduct) and performance. The market structure for agricultural value chain in Nigeria is marred by monopoly of developed foreign industries that use technology to mass produce, process the value chain with standardization and packaging and then export at cheaper rates to Nigeria and other import-dependent developing countries. This is at the expense of local industries that need some form of protection like import restriction or outright ban. Conversely, each firm's performance can influence, in some degree, its future market position. Economies of scale can justify monopoly power, according to the chain theory. Technology innovation and competition are key factors of market behavior and market performance. Nigeria's market performance in agribusiness has been dismally poor in the global market due to the absence of latest innovation in the value chain. Nigeria faces the challenges of dumping, smuggling and reckless agricultural imports. Competition is a complex process of mutual pressure, if the pressure is sharply uneven among rivals, then competition is usually not effective. The evaluations of cause- -and- effect on the sector and the economy as a whole needs to include, not only allocation efficiency, but also x-efficiency, innovation and equity. Market dominance reflects a firm's superior efficiency such as Monsanto, Dabeinong(DBN) and China Seed Group Co Ltd (CGS)..

The eight (8) preconditions or policy requirements to provide enabling environment for sustainable development of agricultural value chain in Nigeria are analyzed in table 1.

Table-1. Foundamentals of Agricultural Value Chain in Nigeria

Credit and financial support	Access to credit is a pivotal requirement for all value chain stakeholders, including small-scale processors and retailers, storage operators, and traders. Access to credit will boost small entrepreneurs, for instance, to buy processing or packaging machines, develop storage facilities, and differentiate products.
Infrastructure	Infrastructure reduces the costs of doing business and creates more jobs; Roads, rail, airports, electricity, water and gas. Creating and rehabilitating rural roads focused on linking areas with a competitive advantage to markets can help form competitive value chains
Technology	There is need for constant innovation and technological inputs in the value chain elements to raise productivity, reduce costs, and stay competitive.
Markets	Addressing market-information issues and support for key market drivers will enable value chain stakeholders to develop products that respond to market needs.
Institutions and Policies	Good governance, the World Bank, the Central Bank of Nigeria, Africa Development Bank, Bank of Industry, Agricultural Dev. Bank.
Public-Private Sector Participation in agribusiness	Fostering interaction through public–private partnerships requires identification of opportunities and the development of commercial models.
Research & Development (R&D)	Universities-Polytechnics-industries collaboration. Establishment of science and industrial parks, exports processing zones.
Entrepreneurship Education,	Through capacity building, skills acquisition, the value chain can serve as a

Inclusion of the Poor	means of empowering the poor and creating wealth

Source: Authors' Analysis, 2020

2.2. Rice Industry Value Chain

Nigeria, with supportive policies of border closure, back to farm initiative and the anchor borrowers' program has become the largest rice producer in Africa. Opportunities exist for packaging and modifications and regional market penetration. There is huge potential for expansion of farm and market, for tractor and post-harvest machineries, for construction of warehouses for pre-shipment storage to neighboring countries.

The rice value chain starts with paddy production which could go to cottage millers or Commercial mills for processing and straight to the domestic rice market for sale to consumers. There could also be sub-chains such as the farm gate buyers who supply the local paddy market, where the commercial mills can also buy to process. The challenge in this industry includes access to land, capital, credit, infrastructure and technology especially for farmers. Performing non mechanized, backbreaking farming operations (e.g., transplantation, weeding, and threshing) poses significant health risks for the farmers.

Rice value chain will contribute to pro-poor empowerment by increasing crop yields through hybrid rice, high-yielding varieties, improved farming practices, and higher resource-use efficiency; through lower production risk, stress-tolerant varieties; higher income from higher production, farm diversification, and short-duration varieties; and greater availability of nutritious food from improved grain quality and crop diversification. Further, increasing productivity and production will lead to increased marketable surplus, thus enabling value chain actors to increase their income and purchasing power to buy quality food and other basic needs.

2.3. Palm Oil Value Chain

Oil palm derived from the palm fruit constitutes an essential ingredient of typical Nigerian diets and serves as a commercial product as well. According to Ohimain (2011) Nigeria was the world's leading producer and exporter of palm oil in the 1960s, but has failed to be a leading exporter since the oil boom of the 1970s, (Ndebbio, 2010). The decline in palm oil export from Nigeria is due to 'inefficiency, inability to develop plantation to sizeable level, lack of R&D for improved varieties, poor quality of oil produced and lack of value chain development. Currently, Malaysia (a country that borrowed oil palms from Nigeria in the 1980s) and Indonesia top the list of crude palm oil production with about 86% of the world`s supply from large industrial estates (Friends of the Earth 2015). Nigeria occupies the fourth position in global supply.

Table-2. Oil palm production system and categories in Nigeria

Categories	Description	Size	Total	%
Semi-natural or sub-spontaneous palm groves	Natural Groves	2,100,000	2,100,000	83
Individual small holder farms	1-4 Ha	312,176		
Small holder Government schemes and cooperative (farm settlements, NALDA schemes)	1-10 Ha		430.440	12
Out growers schemes	1-10 Ha			
Commercial smallholders	10-100Ha			
Medium size farms	100-500 Ha			
Large oil palm Estates (government + private)	500-10,000	118,264		5
Total		430,440	2,530,440	100

Source: Aid Environment, Omoti (2009); Field Survey, 2019

Palm oil is the first primary product that is processed in the value chain. In Nigeria, the processing of palm oil has been dominated by traditional, semi-mechanized processing equipment and there are a limited number of automated processors in the country, especially among the functional large estates. The vegetable oil industry is capable of processing 900,000 tones of palm oil annually. However, due to the inadequate supply of the product, several of the palm oil refineries are operating at less than 25% of installed capacity. Consequently, the major end users of palm oil and its derivatives which include industries producing soaps, biscuits, noodles, savory and milk, find it difficult to get regular supplies of palm oil derivatives locally. At the village level, small-scale processing dominates, usually producing low quality palm oil with a high level of Free Fatty Acids. Most of the large scale oil palm estates were established by state governments and the privatization of these estate farms often faces local discontent.

The potential land available for oil palm development in Nigeria is estimated to be 24 million hectares (Omoti, 2014). From that area, about 2,300,000 ha are under natural groves and 430,439.59 hectares are plantations, totaling 11.4% of potential land available that is already covered. There is huge potential for local, domestic and foreign direct investment in the Nigeria oil palm industry value chain.

2.4. Dairy Product Value Chain

i. Since 1954 import restrictions were lifted and competition with imported milk powder hampered the dairy industry's development in Nigeria. The Kaduna Pilot Pastoral Dairy Cooperative Program was established to vertically organize famers in cooperatives. To date these organizations still exist but are mostly for imported powdered milk. Dairy is a lucrative sector to develop in Nigeria, but faced with numerous challenges; there are pastoralists smallholders that are not used to farming as a business, compounded by

cattle rustling and herdsmen-farmers' clashes. Farmers in different areas react differently to market development activities. As a result costs are high and there is a high level of inefficiency which makes dairy not competitive with imported powder. Nigeria spends about N100 billion yearly in the importation of dairy products. High level and long term investments are required in order to change this sector from subsistence to self-reliance and commercial farming. This will create wealth and generate more than 12 million job opportunities. It will boost the consumption of locally produced fresh milk, cheese and butter.

As part of the agricultural transformation agenda (ATA) the Ministry of Agriculture has developed the DTA (2011). Goals are to increase annual production to 1.1 million MT per year in 2015 and to increase income to 285 million USD for 12 million farmers. The field report of the Nigerian Dairy Enterprise Initiatives implemented by USAID between 2004 and 2006 recommended mix cultural practices that rely more on the large scale usage of Artificial Insemination technology (A.I.) with semen from proven sire. The report also emphasized that A.I. services has to be an integral part of the dairy development in Nigeria for any meaningful and sustainable result.

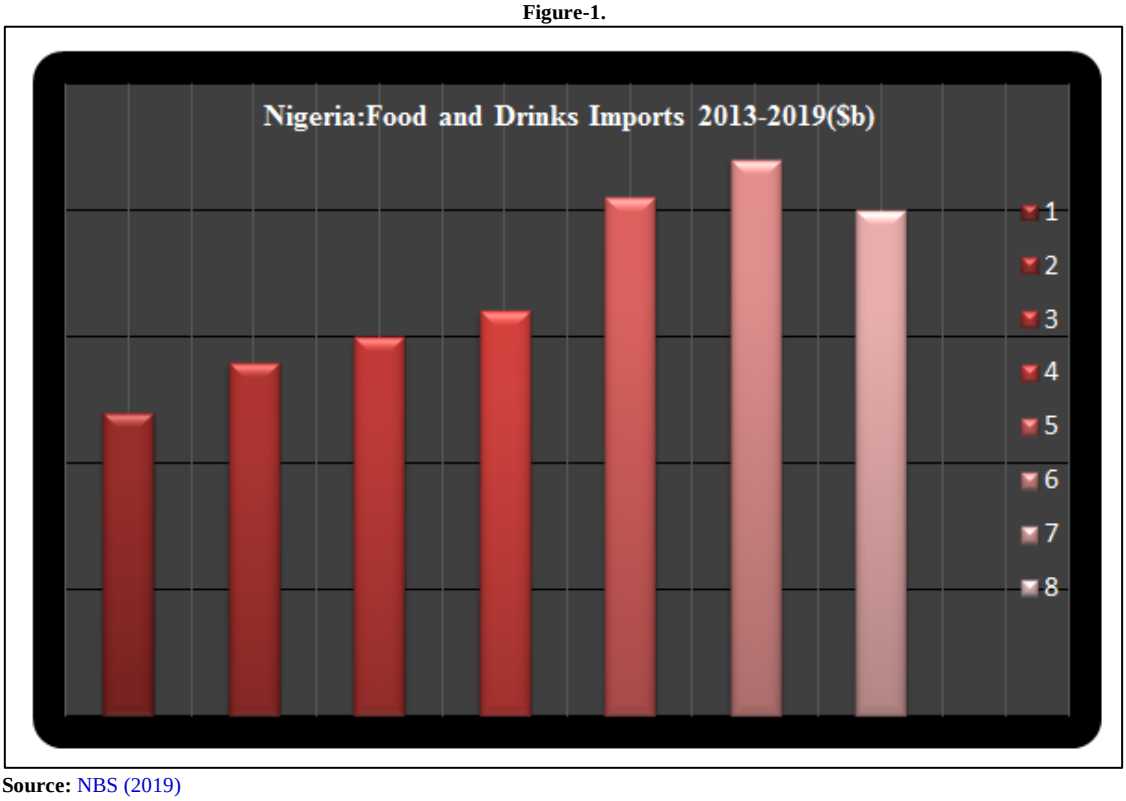
The report also stressed that it is difficult to develop the dairy industry using the local breeds alone. Therefore marketing of mix production cultural Practices was recommended. The Small and Medium Enterprises Development Agency of Nigeria (SMEDAN) in its reports has also recommended the promotion of dairy production cultural mix in Nigeria. This is in addition to the pastoral extension activities. The SMEDAN studies recommended innovative dairy financing and extension project marketing mix and its elements – especially the Four Ps including farm product development, farm development pricing, place or location and promotion.

2.5. Fishery Value Chain

The demand of fish globally and particularly in Nigeria has been on the increase with supplies not meeting up the demand (Food and Agriculture Organization FAO, 2012). With an annual fish demand in Nigeria of about 2.66 million tones, and a paltry domestic production of about 780,000 tons, the demand and supply gap stands at staggering 1.8 million tons (Oyinbo and Rekwot, 2013).

Despite the popularity of farming in Nigeria, the fish farming industry can be described as being at the infant stage when compared to the large market potential for its production and market (Mshelia *et al*., 2010; Nwiro, 2012) . The fish value chain consists of fish farming and value added in different forms like fresh, frozen, canned, smoked or dried form. Fishing is carried out on inland rivers, fish farms lakes and dams and along coastal waters. Fish production for the year 2005 shows that fishing on fish farms account for 8.6%; inland rivers and lakes, 40.78%; coastal waters, 44.7%; shrimps, 2.8%; and fish, 3.2% (Macmillan Nigeria, 2007). Fish production for the year 2006 was 620,000 tons. Fishing is a major source of income and occupation to many people along inland rivers, riverine areas of the Niger Delta and the coastal areas of Nigeria. Rondon and Nzeka (2010) reported that Nigeria's fish demand amounted to nearly 2.0 million MT (valued at more than $1.8 billion), leaving approximately 600,000 metric tons of untapped market potential and about 800,000 metric tons valued at approximately $900 million, were imported fresh and frozen fish (mostly frozen mackerel, herring and croaker). Fish consumption accounts for about 35 percent of animal protein consumption in Nigeria (USAID, 2014).

Figure-1.



Source: NBS (2019)

According to Spore (2012) value chain refers to actors connected along a chain to produce and deliver goods and services through a sequenced and coordinated set of activities that adds value at all stages (production,

processing, and distribution).The value chain concept is used to describe approaches aimed at improving market prospects for producers and scaling up profit margins. Value chain focuses on the actors (private and public, including service providers) and the sequence of value adding activities involved in bringing a product from production to the end consumer.

Fish production in Nigeria has not been consistent in all the sources (artisanal inland, aquaculture and industrial fishing) despite the considerably high potentials; local fish production has failed to meet the country's domestic demand (FAO, 2005). The fish industry remains the most virgin investment in Nigeria compared with the importation of frozen fish in the domestic market (Ndu, 2016).Total domestic fish production in Nigeria ranges between 242,525 and 615,507 metric tons from 1981-2007 and has not been consistent (FDF, 2010).

3. Research Methodology

This study uses the quantitative research design which deals with the statistical and econometrics analysis numerical data, mostly from secondary sources. Quantitative research requires objectively evaluating the data which consist of numbers, trying to exclude bias. . The data set is drawn from the 2018 and 2019 Annual Statistical Bulletins and reports of the Central Bank of Nigeria, the National Bureau of Statistics and World Bank policy research. In order to evaluate the impact of government expenditure on agricultural value chain in Nigeria for the period 1998-2018, the ordinary Least Square Technique (OLS), (Gujarati and Porter, 2013; Koutsoyiannis, 2011), was adopted, using Econometrics Views (E-Views 10 version). We also used structured questions to sample opinion on the fundamentals and challenges of value chain development in Nigeria, analyzed using linkert scale and simple percentages.

3.1. Model Specification

In other to capture the objective of determining the impact of Government expenditure on agricultural value chain, the following model is specified:

GEA = F (ADP, AMR)

The linear relationship is expressed as:

$GEA = \beta_0 + \beta_1 ADP - \beta_2 AMR + \mu$

Where: β_0= intercept

β = Estimated co-efficient

ADP = Aggregate Domestic Production of rice, fish and dairy

GEA = Government Expenditure on Agriculture

AMR = Aggregate Importation of Rice

μ =. Error term.

Table-3. Estimated Ols Regression Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	22.28789.	5.48142.3	-4.066077	0.0007
AMR	-137.9678	90.33749	-1.527249	0.1441
ADP	20.10.001	24.84071	8.091558	0.0000
R-squared	0.839387	Mean dependent var		2759677.
Adjusted R-squared	0.821541	S.D. dependent var		1543590.
S.E. of regression	652080.0	Akaike info criterion		29.74529
Sum squared resid	7.65E+12	Schwarz criterion		29.89450
Log likelihood	-309.3255	Hannan-Quinn criter.		29.77767
F-statistic	47.03539	Durbin-Watson stat		1.257900
Prob(F-statistic)	0.000000			

Source: Author's computation using Eviews 10

Table-4. Granger Causality Test Result

Null Hypothesis:	Obs	F-Statistic	Prob.
AMR does not Granger Cause GEA	19	0.39420	0.6815
GEA does not Granger Cause AMR		2.82424	0.0932
ADP does not Granger Cause GEA	19	1.58210	0.2402
GEA does not Granger Cause ADP		5.21877	0.0203
ADP does not Granger Cause AMR	19	4.74537	0.0267
AMR does not Granger Cause ADP		2.30255	0.1366

Source: Author's computation using EVIEWS 10

Table-5. Unit Root Test

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GEA(-1)	-0.033056	0.038935	-0.849005	0.4070
C	296425.1	118714.0	2.496968	0.0224
R-squared	0.038503	Mean dependent var		208330.9
Adjusted R-squared	-0.014913	S.D. dependent var		256032.9
S.E. of regression	257935.0	Akaike info criterion		27.85344

Sum squared resid	1.20E+12	Schwarz criterion	27.95302
Log likelihood	-276.5344	Hannan-Quinn criter.	27.87288
F-statistic	0.720809	Durbin-Watson stat	1.947438
Prob(F-statistic)	0.407029		

Variable	ADF Statistics	Critical value @ 5%	Level of Stationarity
GEA	-2.576614	-2.510463	1(1)
AMR	-5.958987	-4.035085	1(1)
ADP	-2.634409	-5.062930	1(1)

Source: Author computation using E-Views 10

Table-6. Sampling of the fundamentals and challenges of agricultural value chain in Nigeria

Items	Questions	Responses							
		SA	%	A	%	D	%	SD	%
1	Access to credit and financial support. My enterprise does not get the appropriate loan from government and financial institution.	130	34.0	230	60.2	7	1.8	15	3.9
2	Government provision of infrastructure is adequate for value chain, manufacturing and industrial development in Nigeria...	0	0.0	3	0.7	199	52.1	180	47.1
3	Technological innovation is highly needed for agriculture in Nigeria...	163	42.6	199	52.1	10	2.6	10	2.6
4	Nigeria raw agricultural products hardly pass for international trade as they lack value added, standardization and proper packaging.	142	37.1	215	56.2	20	5.2	5	1.3
5	Institutional and policy support have not been adequate for value chain development in Nigeria	139	36.3	215	56.2	10	2.6	18	4.7
6	R&D is another important precondition for value chain development that needs attention in Nigeria.	143	37.4	220	57.5	10	2.6	9	2.3
7	Public-private partnership holds the key to Nigeria's agribusiness development.	200	52.3	161	42.1	20	5.2	11	2.8
8	Entrepreneurship education would facilitate capacity building, skills acquisition for micro, small and medium scale enterprises in agricultural value chain.	230	60.2	134	35.1	10	2.6	8	2.1
9	Agricultural value chain can end foods and inputs imports in Nigeria.	149	39.0	210	54.4	5	1.3	18	4.7
Total		1296	339	1587	269.08	286	73.03	364	73.11

Source: Field survey, 2019

A sample of 382 responses from field survey were collated, sorted and classified. Table 6 above shows that 130 representing 34.0% of the respondents strongly agreed and 230 representing 60.2 agreed that their enterprises do not get the appropriate loan from the government and financial institutions while 7 representing 1.8% of the respondents disagreed and 15 representing 3.9% of the respondents strongly disagreed that their enterprises get the appropriate loan from financial institution. However, Majority of the respondents 361 representing 94.3% agreed that their enterprises do not get the appropriate loan from the government and financial institutions. Item 2 shows that 0% of the respondents strongly agreed that government's provision of infrastructure is adequate for agricultural value chain, manufacturing and industrial development. This show that infrastructure is a serious challenge for Value chain and industrial development in Nigeria. The same analysis follows for items 3-9.

4. Discussion of Findings

The utility of time, place and standardization has not been fully exploited in the Nigerian agro-industry, which happens to be one of the core functions of marketing. Our major pitfall is on the issue of packaging and standardization which has ousted us from the global market to our own economic detriment. Effective packaging adds value to produce, enables tradability and traceability, enhances standardization, and provides feedback thereby

gaining the confidence of customers. Nigeria agricultural produce hardly pass the Universal Product Code (UPC) for scanning of trade items

A value chain is a connected string of companies, group and other players working together to satisfy market demands for a particular product or group of products. Farming is only a small though important part of the agribusiness value chain. The value chain includes resource data processing, input provision, production aggregating (covering, bulking, cleaning and grading), processing and packaging, retailing and recycling. Making the value chain work efficiently involves connecting farmers to markets. Thus, a typical agricultural value chain is made up of the following; entrepreneurs, input dealers, producers, processors, marketers and consumers. Along the value chain, there is demand for different financial requirement and services. It could be demand for working capital which is a short to medium term loan or the demand for long term loan to acquire plant and machinery. There could also be demand for insurance services export finance and so on.

Within this framework, value-chain promotions draw upon a multiple of different activities. These range from the provision of advisory services, financing, inputs and business management training, to the promotion of institutions supporting business relationship between the different actor groups in a value chain. In cocoa value chain for instance, if we take a bar of chocolate, only 6 per cent of the value of that chocolate bar comes from farming i.e. growing cocoa plants and harvesting the cocoa beans, the rest is in inputs, transportation, processing, storage and marketing. The marketing alone is further divided into sub components of packaging, advertising, wholesale, retailing, and various consumption services.

It is not that Nigeria does not produce; we do produce and export quite a lot of raw agricultural products. There is need to ensure that the farmer gets the right kind of fertilizer for the kind of soil and to make sure he gets the right kind of agro-chemicals, pesticides and etc? These are very important inputs that Nigeria and Nigerians need to work into the nation's agricultural value chain.

Agricultural value chain encompasses the flow of products, knowledge and information between smallholder farmers and consumers. It offers the opportunity to capture added value at each stage of the production, marketing and consumption process. Smallholder farmers need to be better engaged with value chain in order to gain added value for improving their livelihoods, whilst reducing their risks and increasing their resilience. The aim of poverty-oriented promotion of agricultural value chain, which emphasis modernization and connectivity to market, is to put resource poor smallholder producers and processors in a better position to increase their production and productivity, to improve the quality and marketing of their product and consequently to generate higher income, at the same time, it aims to contribute to poverty reduction by creating paid employment in primary production, in processing or in trade.

5. Conclusion

In this period of building an economy that is ravaged by the Covid-19 pandemic, diversifying and developing the value chain is the new normal for Nigeria. The agricultural value chain is still under developed and underutilized in Nigeria. Science and technology in agriculture begins with quality soil, hybrid and high yielding varieties of crops and animals, as well as other inputs through the value chain of production, processing, storage, packaging marketing and consumption. Constant power supply for instance is a necessary pre-condition for agricultural value chain to thrive. Infrastructure is a core component of the value chain business. The results revealed that governments spending on agricultural sector have greater implications on the sector's performance, the value chain development and economy diversification in Nigeria. Agricultural value chain has potentials to reduce the ever increasing dependency on import, in addition to creating millions of jobs and income at all levels. Restricting food imports should have been a gradual process while domestic food production capacity is boosted with the afore-mentioned preconditions (infrastructure, subsidies, access to credits and technology innovation). Since Nigeria cannot yet meet domestic demand for most food commodities, restriction of imports and the lack of value chain development have caused food price inflation, famine and increased smuggling.

Recommendations

1. The government should increase the expenditure on agriculture so as to curtail the importation of rice in Nigeria because in line with economic theory import has a negative sign on the economy, it is a leakage. As government expenditure on agricultural sector increases, the value chain and Aggregate domestic production is expected to increase as well. Government should increase its budgetary allocation to the agricultural sector in a consistent manner and also facilitate research and development of value chain in all endowments...
2. The study recommends that there is need to develop a comprehensive and effective road networking which will help farmers to make use of tractors and add more values to agricultural production and also send water which is seen as a major constraint to the development of coastal fish value chain.
3. The government should also put more effort to ensure that farmers are financially literate and should have more access to land, equipment and proper storage facilities this will help to increase production and add more value to agriculture.
4. Government should provide appropriate diary technologies and advisory services for diary producers, which will add more value to diary processing in Nigeria.
5. The government should establish agro-processing zones in the 774 local government areas in Nigeria. Each of these zones should target the local endowments in agriculture e.g diary processing in north- East and north-west areas, cocoa value chain processing in the south-west, palm oil and fruits processing zones in

the South-South and the East, cotton, groundnut, rice e.t.c according to resource endowments. Develop 774 dams for irrigation and all-season farming, turning Nigeria from a net importer of food to a net exporter of processed foods. Restricting food imports to boost local production, cottage industries, agro-processing for local and export markets.

6. There should be public-private partnership in all the above five recommendations.

Acknowledgement

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Limitations

The absence of students' research grant in the department and the University of Jos entirely has hindered and stressed the robustness of this study. The scope was limited due to this factor. The wastages of farm harvests in the six geopolitical zones of Nigeria was left out in this coverage, as well as the various agricultural endowments for value chain development. These could be potentially useful for further researches.

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Appendices

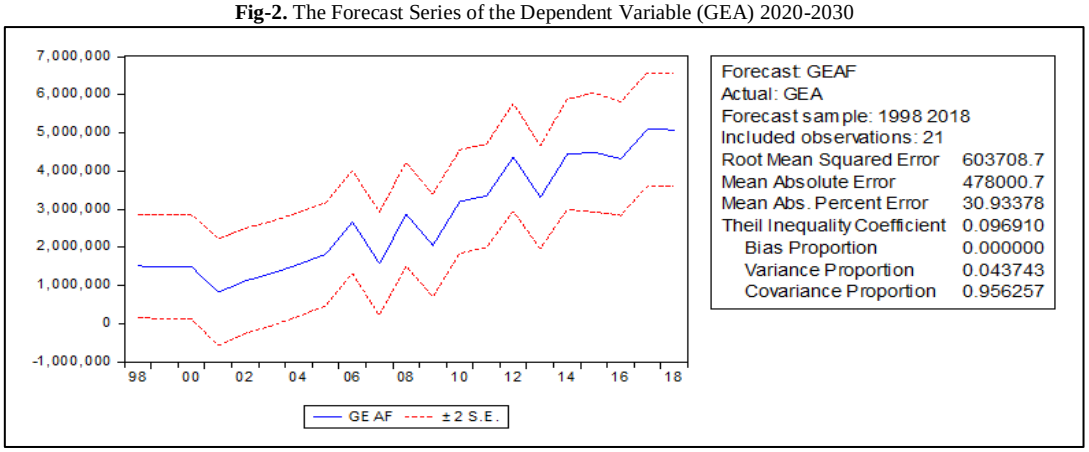
Regression Data: Trend of Government Expenditure on Agriculture (GEA), Aggregate Domestic Product (ADP) and Aggregate Rice Imports (AMR) in Nigeria: 1998-2018.

Years	ARM	ADP	GEA
1998	1500	1965	4871134
1999	1700	1966	947690
2000	1900	1979	701050.9
2001	1900	1651	1017996
2002	1300	1757	1018178
2003	1500	1870	1225988
2004	1700	2000	1384000
2005	1800	2140	1743200
2006	1600	2546	1842588
2007	1700	2008	2348593
2008	1400	2632	3078593
2009	1500	2234	3280772

2010	1700	2818	3993249
2011	1900	2906	4233013
2012	2090	3423	4199978
2013	4105	3038	4252317
2014	6802	3782	4324218
2015	8706	3941	4335417
2016	7590	3780	4267324
2017	2000	3780	4618202.2
2018	2100	3780	4653732

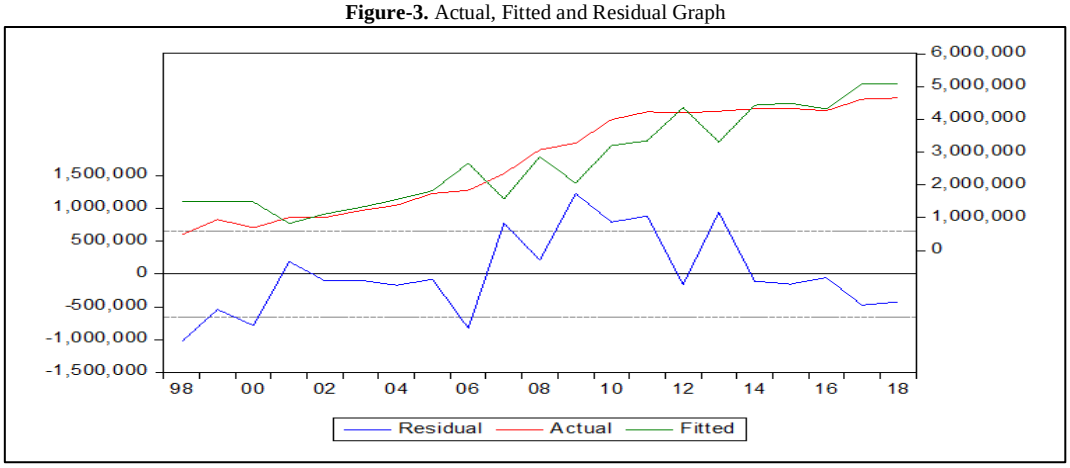
Source: USDA Foreign Agricultural Service (2019), Central Bank of Nigeria CBN (2019)

Fig-2. The Forecast Series of the Dependent Variable (GEA) 2020-2030



Source: Author's computation using Eviews 10

Figure-3. Actual, Fitted and Residual Graph



Source: Author's computation using Eviews 10

Figure-4. Standardized Residual Graph for Dependent Variable (GEA) 1998-2018